Patent Claims

1. A power output stage for capacitive loads comprising:
- an energy storage inductance (8), one end of which is connected to a reference potential (9) and which at the opposite end is connected on the input side to a power supply connection (1) and on the output side to a secondary energy storage capacitance (4);
- a primary energy storage capacitance (3) which is connected upstream of the energy storage inductance (8) on the input side, with the primary energy storage capacitance (3) once again being connected on the input side via a primary switching element (12) with the reference potential (9), and
- a secondary switching element (14) which is connected in series with the secondary energy storage capacitance (4),
characterized in that
the input of the power output stage is clocked by an additional switch (20).

2. The power output stage as claimed in claim 1, in which the primary switching element (12) is bridged by a primary diode (13) which is reverse-biased for a supply voltage which is applied to the power supply connection.

3. The power output stage as claimed in claim 1 or 2, in which the secondary switching element (14) is bridged by a secondary diode (15) which is forward-biased for a supply voltage which is applied to the power supply connection.

4. The power output stage as claimed in one of the preceding claims, in which the energy storage inductance (8) is an air-cored coil.

5. The power output stage as claimed in one of the preceding claims, in which the filter inductance (2) is connected between the power supply connection (1) and the primary energy storage capacitance (3).

6. The power output stage as claimed in claim 5, in which the filter inductance (2) is an air-cored coil.

7. The power output stage as claimed in one of the preceding claims, in which the value of the inductance of the filter inductance (2) is greater than the value of the inductance of the energy storage inductance (8).

8. The power output stage as claimed in one of the preceding claims, in which the secondary energy storage capacitance (4) is a piezo element.

9. The power output stage as claimed in one of claims 1 to 7, in which the secondary energy storage capacitance (4) is an elecrostrictive component.

10. The power output stage as claimed in claim 8, in which the piezo element is a piezo actuator which is suitable for operation of valves in an internal combustion engine.

11. The power output stage as claimed in claim 8 or 10, in which the piezo element is a piezo actuator which is manufactured using a multilayer technique.

12. A method for operation of a power output stage as claimed in one of claims 1 to 11, in which the primary energy storage capacitance (3) is charged in the pauses during which the secondary energy storage capacitance (4) is neither being charged nor discharged, the switch (20) is closed in a first step in order to clock the input, so that the primary energy storage capacitance

(3) is short-circuited, and the switch (20) is opened after a specific time, such that the energy which is stored in the filter inductance (2) and in the energy storage inductance (8) is used to charge the primary energy storage capacitance (3).

13. The method as claimed in claim 12, in which a diode (19) which is connected on the input side of the primary energy storage capacitance (3) is used to prevent the energy in the primary energy storage capacitance (3) from flowing back into the supply source.

14. The method as claimed in claim 12 or 13, in which the variable pulse width on the switch (20) is used to determine a maximum current which flows through the filter inductance (2).